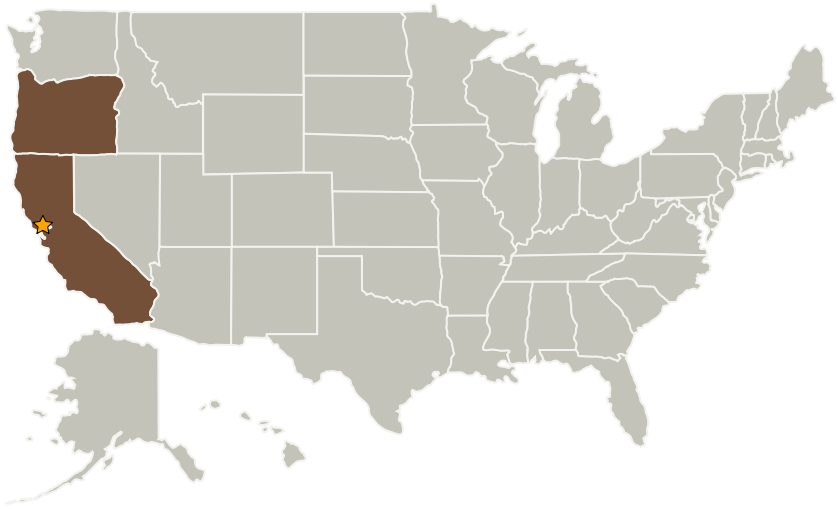
Miniature Time of Flight Mass Spectrometer for Space and Extraterrestrial Applications, Phase II

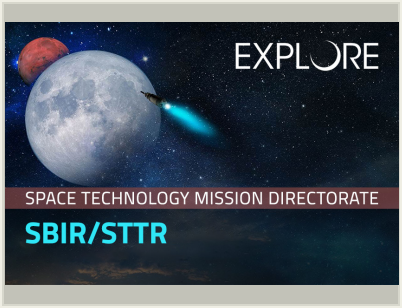
Completed Technology Project (2005 - 2007)

Project Introduction

The PI has developed a miniature time-of-flight mass spectrometer (TOF-MS), which can be op-timized for space and extraterrestrial applications, by using a revolutionary ion-focusing scheme. The instrument is optimized for a matrix assisted laser desorption/ionization ion source. The design is compact and the device that will be built under a Phase II grant will have a mass of less than 1 kg, a volume of less than one liter and draw approximately 3.5 Watts, exclusive of vac-uum generation, laser and sample-handling equipment. The proposed device will include a sam-ple-handling component, which will slightly increase the mass, volume and power requirements. Although there are several miniature TOF-MS systems currently available (NASA has a design available for licensing) the proposed innovation will out-perform all of the miniature designs currently available by 1 to 2 orders of magnitude (resolution and sensitivity) and has mass resolution comparable to current full-size research instruments. For commercial applications where volume, mass and power requirements are not so stringent, a device that performs better than current full-sized instruments can be designed.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Opti-MS Corporation	Supporting Organization	Industry	Portland, Oregon

Primary U.S. Work Locations	
California	Oregon

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes